

# PATENT SPECIFICATION

DRAWINGS ATTACHED

1,109,040



1,109,040

Date of Application and filing Complete Specification: 3 Aug., 1966.  
No. 34876/66.

Application made in Germany (No. H56771 1c/38c) on 4 Aug., 1965.  
(Patent of Addition to No. 1,054,881 dated 23 Feb., 1965).

Complete Specification Published: 10 April, 1968.

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Index at acceptance: —B5 L43A

Int. Cl.: —B 27 g 7/00

## COMPLETE SPECIFICATION

### Gluing Press for Joining Continuously Moving Workpieces End-to-End

We, GUNTER GIESECKE, GERHARD GIESECKE and KAROLINE GIESECKE, all of Mitterteicher Strasse 16, Tirschenreuth/Oberpfalz, Germany and HERMINE GIESECKE of Wustenroterweg 7, Ulm-Soffingen, Germany, all of German nationality, and all trading as HUBEL & PLATZER of Tirschenreuth/Oberpfalz, Germany, do hereby declare the invention, for which we pray that a patent 5 may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

This invention relates to gluing presses 10 for joining continuously moving workpieces end-to-end.

Our British Patent Specification No. 1,054,881, to which this application is an application for a patent of addition, describes 15 and claims a method of connecting end-to-end, by means of an adhesive substance, workpieces provided at their end faces with dovetailing or a similar configuration, more particularly wooden workpieces, wherein the workpieces are pressed temporarily against 20 one another for connecting purposes with their end faces which have been provided with adhesive substance, wherein the workpieces are given a continuous feeding movement and, in order to effect the connection or several simultaneous connections, the feeding movement 25 of a forward workpiece in each case, as viewed in the direction of the feed, is delayed relatively to the feeding movement of the following workpiece or workpieces temporarily to 30 effect the pressing of the workpieces together by a braking means which participates in the delayed feed movement and is automatically brought into operation at a specific feed position 35 of the connection region.

There is also described in that specification [Price 4s. 6d.]

an apparatus in which a counterpressure slide is arranged downstream, of the feed direction of a feeding system for the workpieces, and said slide being adapted to be pressed against a forward workpiece and, during the feeding of the workpieces, is adapted to be displaced with a delaying action along with the said workpiece in opposition to the action of an elastically yieldable tension or compression element.

In this apparatus, in contrast to hitherto-known arrangements, the drag shoe and the support table therefor are capable of movement in a direction parallel to the direction of feed of the workpieces. In the apparatus of our British Specification No. 1,054,881, the counterpressure slide has a shoe which is clamped to the workpiece and travels with the same while the slide moves against the tension or compression element. As soon as sufficient tension has been created, the shoe is unlamped from the workpiece and the slide returns to its former position, however, it is not possible, if desired, to apply a continuous substantially constant longitudinal force to each or several workpieces with this arrangement, and it is therefore an object of the present invention to provide an apparatus capable of achieving this end.

Accordingly, the present invention provides a gluing press for jointing continuous moving workpieces end-to-end, comprising means for feeding the workpieces, a device disposed downstream of the feeding means and adapted to retard temporarily a workpiece, the retarding device comprising a support table and at least one drag shoe fast with the latter and adapted to slide in use under a variable pressure frictionally on the surface of a workpiece, the retarding device being capable of reciprocal movement in a direction parallel to the feed direction of the workpieces, and

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a force sensitive means actuatable by the position of the retarding device and adapted to cause the regulation of the magnitude of the pressure exerted in use by the drag shoe on the workpiece, the arrangement being such that in use the longitudinal frictional force caused by the pressure exerted by the drag shoe(s) in the workpiece while the latter is fed past the drag shoe(s) is predetermined.

It is not sufficient simply to ascertain the holding-down pressure of the drag shoe on the workpiece surface, since the coefficient of friction varies continuously, on the one hand due to the varying surface quality and on the other hand also due to the varying quantities and viscosity of the glue. Thus, with presses of this kind it has hitherto not been possible to adjust and monitor the longitudinal pressure necessary for a predetermined cross-section, which said longitudinal pressure is determined by the specifically necessary pressure of for example 50kg/cm<sup>2</sup> in the case of soft wood, although in the case of the device according to our copending patent application, the maximum longitudinal frictional force can be adjusted by means of the appropriate dimensioning of the resiliently yielding traction or pressure element acting on the drag shoe.

In contrast to the device according to the main patent, wherein the drag shoe adheres firmly to the workpiece during a short period of time and is entrained by the workpiece through a short distance, the drag shoe in the gluing press according to the present invention slides on the surface of the workpiece and produces the longitudinal application pressure by means of its friction. In other words, the drag shoe according to the main patent is designed as a clamping shoe, whereas the drag shoe according to the present invention operate as a sliding shoe.

The support table may transfer the longitudinal pressure force produced by friction, by pneumatic, hydraulic or other means to a measuring apparatus. Then the holding-down pressure exerted on the drag shoe is regulated in dependence on the indicated value of the measuring apparatus.

In a preferred embodiment, the measuring apparatus used is a contact pressure gauge having minimum and maximum indicator pointers which are adjusted to the minimum and maximum longitudinal pressures and by means of which, through the agency of for example a servo-motor adjusting a pressure control valve, the pressure of a pressure medium acting on the drag shoe is adjusted.

In only short workpieces are being glued together, the drag shoe may slide un-interruptedly on the surface of the workpiece. If, on the other hand, long workpieces (4-7 m.) are being glued together, then it is usually more satisfactory for the drag shoe to press intermittently against the surface of the workpieces, depending on the positions of the dovetail portions travelling through the press, but while pressing, to apply a longitudinal frictional force within predetermined limits. Expediently, with this arrangement the intermediate control of the pressure exerted by the drag shoe is effected by means of a photocell, responsive to the varying electrical resistance, by scanning with a scanning apparatus, by means of a travelling counter having a contact maker, or in some similar manner.

If there is a considerable spacing between the driving unit for the feed movement of the workpieces and the drag shoe, and a plurality of dovetailing points are being simultaneously pressed together, this spacing may be bridged-over by means of an equally-long support member and a plurality of holding-down means for the workpieces.

For a better understanding of the invention and to show how the same may be carried into effect, reference will be made, by way of example, to the accompanying drawing, in which:—

Figure 1 shows a lateral view of a gluing press according to the invention; and

Figure 2 shows a section taken through the longitudinal axis of the press of Figure 1.

Referring now to the accompanying drawing, workpieces 1 having dovetailed end faces which are to be glued together, after passing through a gluing device 2, are fed by a chain belt 3 operating as a driving unit to the braking unit. The latter consists in this case of a support table 4 which is mounted in a frame 11 and is displaceable in the feed direction of the workpieces, and of a drag shoe 5 which is fast with the support table and which is subdivided into individual pressure elements 6, which are independent of each other and are loaded pneumatically, hydraulically, or by spring pressure. By means of the spindles 7 mounted in stirrups 12, the spacing between the support table 4 and the drag shoe 5 can be adjusted so as to be suitable for differently sized workpieces.

Connected to the support table 4 is a piston 8 adapted to be displaced in a cylinder 9 filled with fluid medium. The interior of the cylinder is connected via a pipe 13 with a pressure gauge 10, the indicated value of which indicates the magnitude of the longitudinal pressure force between the workpieces.

The pressure indicated in the gauge 10 is used to control means (not shown) which adjust the pressure in the pressure elements 6, whereby the pressure exerted by the drag shoe 5 is varied.

It should be pointed out that the press according to the main patent may be adapted so as to operate as a press according to the present invention if the holding-down pressure of the counter-pressure slide is diminished to such an extent that the slide slides on the surface of the workpieces and produces the

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desired longitudinal frictional force, the tension or compression element being used to regulate the magnitude of the pressure exerted by the slide.

5      **WHAT WE CLAIM IS:—**

10     1. A gluing press of joining continuously moving workpieces end-to-end, comprising means for feeding the workpieces, a device disposed downstream of the feeding means and adapted to retard temporarily a workpiece, the retarding device comprising a support table and at least one drag shoe fast with the latter and adapted to slide in use under a variable pressure frictionally on the surface of a workpiece, the retarding device being capable of reciprocal movement in a direction parallel to the feed direction of the workpieces, and a force sensitive means actuatable by the position of the retarding device and adapted to cause the regulation of the magnitude of the pressure exerted in use by the drag shoe on the workpiece, the arrangement being such that in use the longitudinal frictional force caused by the pressure exerted by the drag shoe(s) on the workpiece while the latter is fed past the drag shoe(s) is predetermined.

15     2. A gluing press as claimed in Claim 1, wherein the force sensitive means comprises a pressure gauge having minimum and maximum indicators capable of being adjusted to the desired maximum and minimum longitudinally acting frictional force, the pressure gauge being capable of actuating a motor capable of causing the adjustment of the pressure of the shoe(s) on the workpiece.

20     3. A gluing press as claimed in Claim 1, wherein the intermittent control means comprises contact members capable of detecting the change in electrical resistance in the region of the end-to-end connection.

25     4. A gluing press as claimed in Claim 4, wherein the intermittent control means comprises a photocell.

30     5. A gluing press as claimed in Claim 4, wherein the intermittent control means comprises a scanning apparatus.

35     6. A gluing press as claimed in Claim 4, wherein the intermittent control means comprises pressure elements which are expandable in use under the influence of pressurized fluid.

40     7. A gluing press as claimed in Claim 4, wherein the intermittent control means comprises a scanning apparatus.

45     8. A gluing press as claimed in any preceding claim, wherein the drag shoe(s) is/are actuatable by pressure elements which are expandable in use under the influence of pressurized fluid.

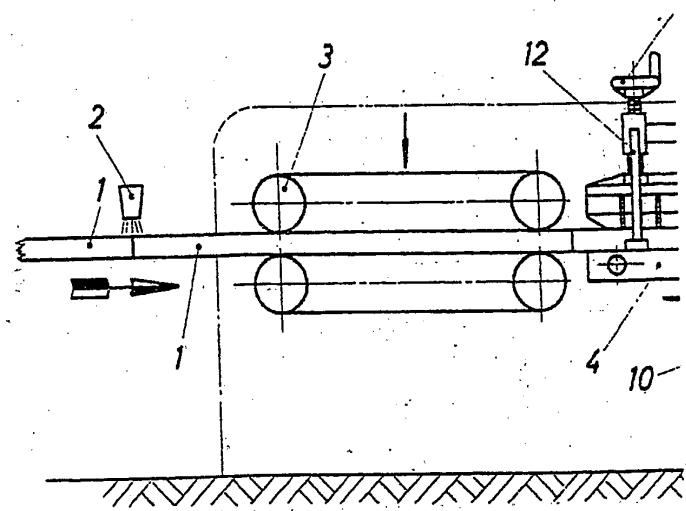
50     9. A gluing device as claimed in any preceding claim, and further comprising means for holding the workpieces down on the structure which supports them as they pass in use through the retarding means.

55     10. A gluing press, substantially as hereinbefore described with reference to, and as shown in, the accompanying drawing.

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Printed for Her Majesty's Stationery Office by the Courier Press, Leamington Spa, 1968.  
Published by the Patent Office, 25, Southampton Buildings, London, W.C.2, from which copies may be obtained.

Fig. 1



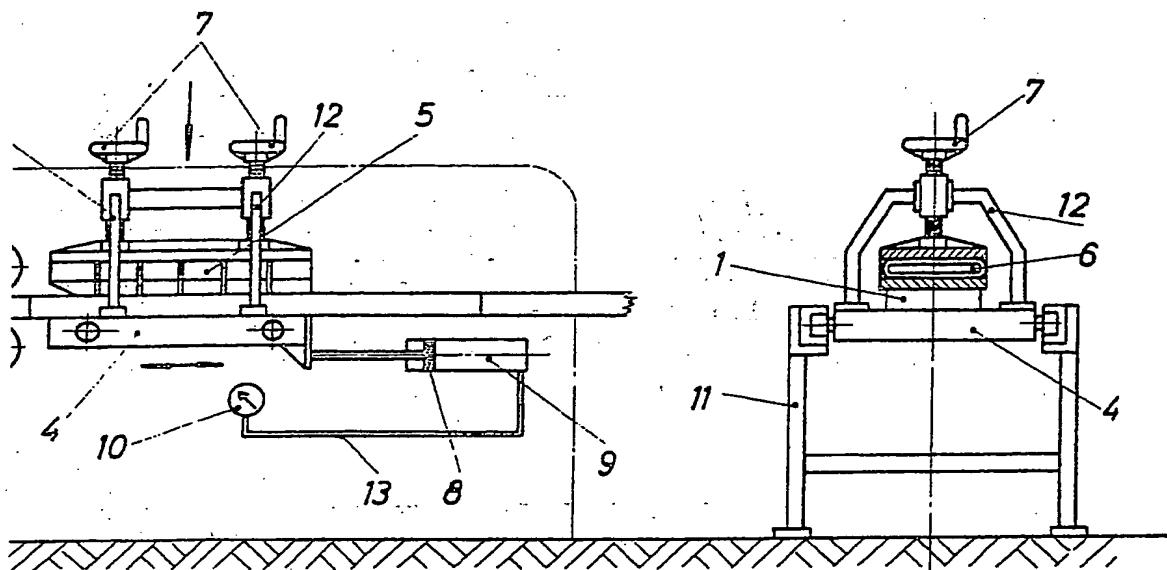
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COMPLETE SPECIFICATION

1 SHEET

*This drawing is a reproduction of  
the Original on a reduced scale.*

Fig. 2



1,109,040 COMPLETE SPECIFICATION  
1 SHEET  
This drawing is a reproduction of  
the Original on a reduced scale.

Fig. 1

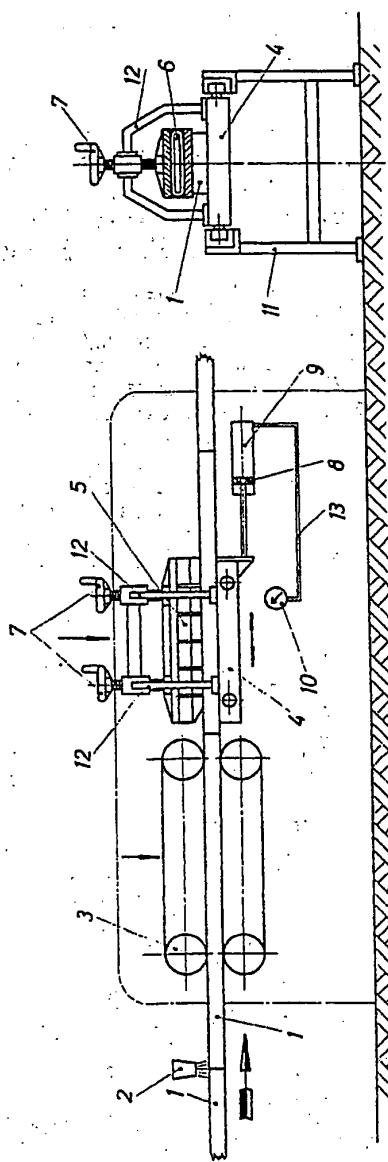


Fig. 2

